

SAF-B00-054
100-NR-1 TSD Sites
R. A. Sampling – Soil
FINAL DATA PACKAGE

FAX RESULTS TO:

Rick Kerkow

372-8655

N/A
INITIAL/DATE**VERIFICATION OF CLIENT RECEIPT:**

Phone or CC:Mail to Rick Kerkow

N/A
INITIAL/DATE**COMPLETE COPY OF DATA PACKAGE TO:**

Rick Kerkow

X5-60

BS 4/20/03
INITIAL/DATE

Jeanette Duncan

BS 4/20/03
INITIAL/DATE**COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)**

SDG

H2051

SAF-B00-054

X Rad only

Chem only

Rad & Chem

X Complete

Partial

Waste Site: 116-N-1 Trench**RECEIVED**
APR 28 2003**EDMC**



EBERLINE

SERVICES

February 15, 2003

Ms. Joan Kessner
Bechtel Hanford Inc.
3350 George Washington Way
Richland, WA 99352
MSIN: H0-25

Reference: P.O. #630
Eberline Services R3-01-102-7756, SDG H2051

Dear Ms. Kessner:

Enclosed is the data report for three solid samples designated under SAF No. B00-054 received at Eberline Services on January 22, 2003. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

FEB 2003

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2051 was composed of three solid (soil) samples designated under SAF No. B00-054 with a Project Designation of: 100-NR-1 TSD Sites R.A. Sampling – Soil. The samples in SDG H2051 (Group R301102-7756) were batched with the samples in SDG H2050 (Group R301100-7436).

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 30, 2003.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."



Melissa C. Mannion
Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H2051

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S	
About this section	1
Sample Summaries	3
Prep Batch Summary	5
Work Summary	6
Method Blanks	8
Lab Control Samples	9
Duplicates	10
Data Sheets	11
Method Summaries	14
Report Guides	18
End of Section	32

Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2051

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 1

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
Contract No. 630
Case no SDG_H2051

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 2

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

SAMPLE SUMMARY

SDG 7756

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2051

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
J00F40	116-N-1 Trench	SOLID		R301102-01	B00-054	B00-054-225	01/16/03 08:50
J00F41	116-N-1 Trench	SOLID		R301102-02	B00-054	B00-054-225	01/16/03 09:00
J00F42	116-N-1 Trench	SOLID		R301102-03	B00-054	B00-054-225	01/16/03 09:10
Method Blank		SOLID		R301100-03	B00-054		
Lab Control Sample		SOLID		R301100-02	B00-054		
Duplicate (R301102-01)	116-N-1 Trench	SOLID		R301102-04	B00-054		01/16/03 08:50

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CS

Version 3.06

Report date 01/30/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

QC SUMMARY

SDG 7756

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG H2051

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7436		Method Blank	SOLID						R301100-03	7436-003
		Lab Control Sample	SOLID						R301100-02	7436-002
7756	B00-054-225	J00F40	SOLID	88.9	1097 g		01/22/03	6	R301102-01	7756-001
		J00F41	SOLID	91.2	950 g		01/22/03	6	R301102-02	7756-002
		J00F42	SOLID	92.3	1093 g		01/22/03	6	R301102-03	7756-003
		Duplicate (R301102-01)	SOLID	88.9	1097 g		01/22/03	6	R301102-04	7756-004

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-QS

Version 3.06

Report date 01/30/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2051

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED						QUALIFIERS
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	
Beta Counting											
SR	SOLID	Total Strontium in Soil	7043-061	10.0	3			1	1	1/1	
Gas Proportional Counting											
93A	SOLID	Gross Alpha in Soil	7043-061	20.0	3			1	1	1/1	
93B	SOLID	Gross Beta in Soil	7043-061	15.0	3			1	1	1/1	
Gamma Spectroscopy											
GAM	SOLID	Gamma Scan	7043-061	15.0	3			1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

Page 1

SUMMARY DATA SECTION

Page 5

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/30/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2051

CLIENT SAMPLE ID		LAB SAMPLE ID									
LOCATION	MATRIX	COLLECTED	PLANCHET	TEST	SUF-	ANALYZED	REVIEWED	BY	METHOD		
CUSTODY	SAF No	RECEIVED			FIX						
J00F40		R301102-01	7756-001	93A/93		01/27/03	01/30/03	MCM	Gross Alpha in Soil		
116-N-1 Trench	SOLID	01/16/03	7756-001	93B/93		01/27/03	01/30/03	MCM	Gross Beta in Soil		
B00-054-225	B00-054	01/22/03	7756-001	GAM		01/23/03	01/30/03	MCM	Gamma Scan		
			7756-001	SR		01/27/03	01/30/03	MCM	Total Strontium in Soil		
J00F41		R301102-02	7756-002	93A/93		01/27/03	01/30/03	MCM	Gross Alpha in Soil		
116-N-1 Trench	SOLID	01/16/03	7756-002	93B/93		01/27/03	01/30/03	MCM	Gross Beta in Soil		
B00-054-225	B00-054	01/22/03	7756-002	GAM		01/23/03	01/30/03	MCM	Gamma Scan		
			7756-002	SR		01/27/03	01/30/03	MCM	Total Strontium in Soil		
J00F42		R301102-03	7756-003	93A/93		01/27/03	01/30/03	MCM	Gross Alpha in Soil		
116-N-1 Trench	SOLID	01/16/03	7756-003	93B/93		01/27/03	01/30/03	MCM	Gross Beta in Soil		
B00-054-225	B00-054	01/22/03	7756-003	GAM		01/23/03	01/30/03	MCM	Gamma Scan		
			7756-003	SR		01/27/03	01/30/03	MCM	Total Strontium in Soil		
Method Blank		R301100-03	7436-003	93A/93		01/27/03	01/30/03	MCM	Gross Alpha in Soil		
	SOLID		7436-003	93B/93		01/27/03	01/30/03	MCM	Gross Beta in Soil		
	B00-054		7436-003	GAM		01/28/03	01/30/03	MCM	Gamma Scan		
			7436-003	SR		01/27/03	01/30/03	MCM	Total Strontium in Soil		
Lab Control Sample		R301100-02	7436-002	93A/93		01/28/03	01/30/03	MCM	Gross Alpha in Soil		
	SOLID		7436-002	93B/93		01/27/03	01/30/03	MCM	Gross Beta in Soil		
	B00-054		7436-002	GAM		01/28/03	01/30/03	MCM	Gamma Scan		
			7436-002	SR		01/27/03	01/30/03	MCM	Total Strontium in Soil		
Duplicate (R301102-01)		R301102-04	7756-004	93A/93		01/27/03	01/30/03	MCM	Gross Alpha in Soil		
116-N-1 Trench	SOLID	01/16/03	7756-004	93B/93		01/27/03	01/30/03	MCM	Gross Beta in Soil		
	B00-054	01/22/03	7756-004	GAM		01/24/03	01/30/03	MCM	Gamma Scan		
			7756-004	SR		01/27/03	01/30/03	MCM	Total Strontium in Soil		

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/30/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H2051

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B00-054	Gross Alpha in Soil	900.0_ALPHABETA_GPC	3			1	1	1	6
93B/93	B00-054	Gross Beta in Soil	900.0_ALPHABETA_GPC	3			1	1	1	6
GAM	B00-054	Gamma Scan	GAMMA_GS	3			1	1	1	6
SR	B00-054	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	3			1	1	1	6
TOTALS				12			4	4	4	24

WORK SUMMARY

Page 2

SUMMARY DATA SECTION

Page 7

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2051

R301100-03

Method Blank

METHOD BLANK

SDG <u>7756</u>	Client/Case no <u>Hanford</u>	SDG <u>H2051</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R301100-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7436-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B00-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.685	1.2	2.8	10	U	93A
Gross Beta	12587-47-2	0.023	3.3	5.6	15	U	93B
Total Strontium	SR-RAD	0.075	0.47	0.97	1.0	U	SR
Potassium 40	13966-00-2	U		0.21		U	GAM
Cobalt 60	10198-40-0	U		0.011	0.050	U	GAM
Cesium 137	10045-97-3	U		0.011	0.10	U	GAM
Radium 226	13982-63-3	U		0.019		U	GAM
Radium 228	15262-20-1	U		0.048		U	GAM
Europium 152	14683-23-9	U		0.026	0.10	U	GAM
Europium 154	15585-10-1	U		0.029	0.10	U	GAM
Europium 155	14391-16-3	U		0.030	0.10	U	GAM
Thorium 228	14274-82-9	U		0.014		U	GAM
Thorium 232	TH-232	U		0.048		U	GAM
Uranium 235	15117-96-1	U		0.042		U	GAM
Uranium 238	U-238	U		1.4		U	GAM
Americium 241	14596-10-2	U		0.060		U	GAM

100-NR-1 TSD Sites R.A. Sampling

QC-BLANK 43675

METHOD BLANKS

Page 1

SUMMARY DATA SECTION

Page 8

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>01/30/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

R301100-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7756</u>	Client/Case no <u>Hanford</u>	SDG <u>H2051</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R301100-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7436-002</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>800-054</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	196	14	3.0	10		93A	200	8.0	98	68-132	70-130
Gross Beta	226	11	5.1	15		93B	212	8.5	107	74-126	70-130
Total Strontium	51.2	2.7	0.94	1.0		SR	53.0	2.1	97	83-117	80-120
Cobalt 60	0.280	0.019	0.010	0.050		GAM	0.299	0.012	94	76-124	80-120
Cesium 137	0.293	0.018	0.012	0.10		GAM	0.303	0.012	97	76-124	80-120

100-NR-1 TSD Sites R.A. Sampling

QC-LCS 43674

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

Page 9

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>01/30/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

R301102-04

J00F40

DUPLICATE

SDG <u>7756</u>	Client/Case no <u>Hanford</u>	SDG <u>H2051</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R301102-04</u>	Lab sample id <u>R301102-01</u>	Client sample id <u>J00F40</u>
Dept sample id <u>7756-004</u>	Dept sample id <u>7756-001</u>	Location/Matrix <u>116-N-1 Trench</u> <u>SOLID</u>
	Received <u>01/22/03</u>	Collected/Weight <u>01/16/03 08:50</u> <u>1097 g</u>
% solids <u>88.9</u>	% solids <u>88.9</u>	Custody/SAF No <u>B00-054-225</u> <u>B00-054</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Gross Alpha	0.714	1.9	3.1	10	U	93A	2.86	2.4	2.9	U	-		
Gross Beta	3.15	4.0	6.5	15	U	93B	1.56	3.3	5.5	U	-		
Total Strontium	0.029	0.12	0.25	1.0	U	SR	0.147	0.15	0.28	U	-		
Potassium 40	10.5	0.52	0.22			GAM	9.69	0.28	0.13		8	33	
Cobalt 60	U		0.027	0.050	U	GAM	U		0.015	U	-		
Cesium 137	0.038	0.021	0.026	0.10		GAM	0.043	0.012	0.015		12	95	
Radium 226	0.367	0.048	0.046			GAM	0.334	0.026	0.024		9	40	
Radium 228	0.635	0.10	0.094			GAM	0.517	0.054	0.051		20	44	
Europium 152	U		0.058	0.10	U	GAM	U		0.031	U	-		
Europium 154	U		0.087	0.10	U	GAM	U		0.044	U	-		
Europium 155	U		0.070	0.10	U	GAM	U		0.039	U	-		
Thorium 228	0.479	0.026	0.026			GAM	0.480	0.016	0.015		0	33	
Thorium 232	0.635	0.10	0.094			GAM	0.517	0.054	0.051		20	44	
Uranium 235	U		0.10		U	GAM	U		0.066	U	-		
Uranium 238	U		2.8		U	GAM	U		1.6	U	-		
Americium 241	U		0.15		U	GAM	U		0.087	U	-		

100-NR-1 TSD Sites R.A. Sampling

QC-DUP#1 43681

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2051

R301102-01

J00F40

DATA SHEET

SDG <u>7756</u>	Client/Case no <u>Hanford</u>	<u>SDG H2051</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R301102-01</u>	Client sample id <u>J00F40</u>	
Dept sample id <u>7756-001</u>	Location/Matrix <u>116-N-1 Trench</u>	<u>SOLID</u>
Received <u>01/22/03</u>	Collected/Weight <u>01/16/03 08:50</u>	<u>1097 g</u>
% solids <u>88.9</u>	Custody/SAF No <u>B00-054-225</u>	<u>B00-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	2.86	2.4	2.9	10	U	93A
Gross Beta	12587-47-2	1.56	3.3	5.5	15	U	93B
Total Strontium	SR-RAD	0.147	0.15	0.28	1.0	U	SR
Potassium 40	13966-00-2	9.69	0.28	0.13			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	0.043	0.012	0.015	0.10		GAM
Radium 226	13982-63-3	0.334	0.026	0.024			GAM
Radium 228	15262-20-1	0.517	0.054	0.051			GAM
Europium 152	14683-23-9	U		0.031	0.10	U	GAM
Europium 154	15585-10-1	U		0.044	0.10	U	GAM
Europium 155	14391-16-3	U		0.039	0.10	U	GAM
Thorium 228	14274-82-9	0.480	0.016	0.015			GAM
Thorium 232	TH-232	0.517	0.054	0.051			GAM
Uranium 235	15117-96-1	U		0.066		U	GAM
Uranium 238	U-238	U		1.6		U	GAM
Americium 241	14596-10-2	U		0.087		U	GAM

100-NR-1 TSD Sites R.A. Sampling

DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 11

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2051

R301102-02

J00F41

D A T A S H E E T

SDG <u>7756</u>	Client/Case no <u>Hanford</u>	SDG <u>H2051</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R301102-02</u>	Client sample id <u>J00F41</u>	
Dept sample id <u>7756-002</u>	Location/Matrix <u>116-N-1 Trench</u>	<u>SOLID</u>
Received <u>01/22/03</u>	Collected/Weight <u>01/16/03 09:00</u>	<u>950 g</u>
% solids <u>91.2</u>	Custody/SAF No <u>B00-054-225</u>	<u>B00-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	1.92	2.4	3.3	10	U	93A
Gross Beta	12587-47-2	-0.977	3.9	6.8	15	U	93B
Total Strontium	SR-RAD	0.019	0.12	0.25	1.0	U	SR
Potassium 40	13966-00-2	10.4	0.62	0.11			GAM
Cobalt 60	10198-40-0	0.034	0.013	0.014	0.050		GAM
Cesium 137	10045-97-3	0.080	0.009	0.010	0.10		GAM
Radium 226	13982-63-3	0.354	0.030	0.022			GAM
Radium 228	15262-20-1	0.574	0.059	0.052			GAM
Europium 152	14683-23-9	U		0.026	0.10	U	GAM
Europium 154	15585-10-1	U		0.036	0.10	U	GAM
Europium 155	14391-16-3	U		0.038	0.10	U	GAM
Thorium 228	14274-82-9	0.518	0.017	0.012			GAM
Thorium 232	TH-232	0.574	0.059	0.052			GAM
Uranium 235	15117-96-1	U		0.053		U	GAM
Uranium 238	U-238	U		1.8		U	GAM
Americium 241	14596-10-2	U		0.015		U	GAM

100-NR-1 TSD Sites R.A. Sampling

DATA SHEETS

Page 2

SUMMARY DATA SECTION

Page 12

Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-DS</u>
Version	<u>3.06</u>
Report date	<u>01/30/03</u>

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

R301102-03

J00F42

DATA SHEET

SDG <u>7756</u>	Client/Case no <u>Hanford</u>	SDG <u>H2051</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R301102-03</u>	Client sample id <u>J00F42</u>	
Dept sample id <u>7756-003</u>	Location/Matrix <u>116-N-1 Trench</u>	<u>SOLID</u>
Received <u>01/22/03</u>	Collected/Weight <u>01/16/03 09:10</u>	<u>1093 g</u>
% solids <u>92.3</u>	Custody/SAF No <u>B00-054-225</u>	<u>B00-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	2.54	2.5	3.4	10	U	93A
Gross Beta	12587-47-2	2.40	3.6	5.9	15	U	93B
Total Strontium	SR-RAD	0.049	0.15	0.29	1.0	U	SR
Potassium 40	13966-00-2	9.56	0.37	0.20			GAM
Cobalt 60	10198-40-0	U		0.034	0.050	U	GAM
Cesium 137	10045-97-3	0.109	0.020	0.022	0.10		GAM
Radium 226	13982-63-3	0.360	0.032	0.032			GAM
Radium 228	15262-20-1	0.521	0.081	0.086			GAM
Europium 152	14683-23-9	U		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.058	0.10	U	GAM
Europium 155	14391-16-3	U		0.043	0.10	U	GAM
Thorium 228	14274-82-9	0.496	0.020	0.019			GAM
Thorium 232	TH-232	0.521	0.081	0.086			GAM
Uranium 235	15117-96-1	U		0.066		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Americium 241	14596-10-2	U		0.058		U	GAM

100-NR-1 TSD Sites R.A. Sampling

DATA SHEETS

Page 3

SUMMARY DATA SECTION

Page 13

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>01/30/03</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

Test SR Matrix SOLID
SDG 7756
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H2051

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 7043-061					
J00F40	R301102-01			7756-001	U
J00F41	R301102-02			7756-002	U
J00F42	R301102-03			7756-003	U
BLK (QC ID=43675)	R301100-03			7436-003	U
LCS (QC ID=43674)	R301100-02			7436-002	ok
Duplicate (R301102-01)	R301102-04			7756-004	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
100-NR-1 TSD Sites R.A. Sampling

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWMH keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 7043-061 2σ prep error 10.0 % Reference Lab Notebook 7043 pg. 061																
J00F40	R301102-01			0.28	1.00			86	100				11	01/27/03	01/27	GRB-217
J00F41	R301102-02			0.25	1.00			93	100				11	01/27/03	01/27	GRB-218
J00F42	R301102-03			0.29	1.00			84	100				11	01/27/03	01/27	GRB-221
BLK (QC ID=43675)	R301100-03			0.97	0.400			73	100					01/27/03	01/27	GRB-224
LCS (QC ID=43674)	R301100-02			0.94	0.400			81	66					01/27/03	01/27	GRB-219
Duplicate (R301102-01) (QC ID=43681)	R301102-04			0.25	1.00			91	100				11	01/27/03	01/27	GRB-222
Nominal values and limits from method				1.0	0.400			30-105	100				180			

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-060 Soil Preparation, rev 4
CP-071 Soil Dissolution, > 1.0g Aliquot, rev 2
CP-502 Strontium in Solids, rev 6

AVERAGES ± 2 SD MDA 0.50 ± 0.71
FOR 6 SAMPLES YIELD 85 ± 14

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 14

Lab id EBRLNL
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/30/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

METHOD SUMMARY

GROSS ALPHA IN SOIL

GAS PROPORTIONAL COUNTING

Test 93A Matrix SOLID

SDG 7756

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Contract SDG H2051

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Alpha
------------------	------------------	-------------	-------------	----------	-------------

Preparation batch 7043-061

J00F40	R301102-01	93		7756-001	U
J00F41	R301102-02	93		7756-002	U
J00F42	R301102-03	93		7756-003	U
BLK (QC ID=43675)	R301100-03	93		7436-003	U
LCS (QC ID=43674)	R301100-02	93		7436-002	ok
Duplicate (R301102-01)	R301102-04	93		7756-004	- U

Nominal values and limits from method RDLs (pCi/g) 10

100-MR-1 TSD Sites R.A. Sampling

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
------------------	------------------	-------------	-------------	--------------	-----------	-------------	---------------	-------------	----------	--------------	------------	--------------	--------------	-------------------	------	----------

Preparation batch 7043-061 2σ prep error 20.0 % Reference Lab Notebook 7043 pg. 061

J00F40	R301102-01	93		2.9	0.100			21	100			11	01/26/03	01/27	GRB-109
J00F41	R301102-02	93		3.3	0.100			21	100			11	01/26/03	01/27	GRB-110
J00F42	R301102-03	93		3.4	0.100			44	100			11	01/26/03	01/27	GRB-111
BLK (QC ID=43675)	R301100-03	93		2.8	0.100			21	100				01/26/03	01/27	GRB-102
LCS (QC ID=43674)	R301100-02	93		3.0	0.100			22	100				01/26/03	01/28	GRB-116
Duplicate (R301102-01) (QC ID=43681)	R301102-04	93		3.1	0.100			22	100			11	01/26/03	01/27	GRB-112

Nominal values and limits from method 10 0.100 5-250 100 180

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3	

AVERAGES ± 2 SD	MDA	3.1	±	0.46
FOR 6 SAMPLES	RESIDUE	25	±	18

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

Page 15

Lab ID EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 01/30/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

METHOD SUMMARY

GROSS BETA IN SOIL

GAS PROPORTIONAL COUNTING

Test 93B Matrix SOLID

SDG 7756

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Contract SDG H2051

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Gross Beta
------------------	------------------	-----------------	------------------	------------

Preparation batch 7043-061

J00F40	R301102-01	93	7756-001	U
J00F41	R301102-02	93	7756-002	U
J00F42	R301102-03	93	7756-003	U
BLK (QC ID=43675)	R301100-03	93	7436-003	U
LCS (QC ID=43674)	R301100-02	93	7436-002	ok
Duplicate (R301102-01)	R301102-04	93	7756-004	- U

Nominal values and limits from method RDLs (pCi/g) 15

100-NR-1 TSD Sites R.A. Sampling

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
------------------	------------------	-----------------	---------------	-----	-----------	-------------	---------------	-------------	----------	--------------	-------------	--------------	--------------	-------------------	------	----------

Preparation batch 7043-061 2σ prep error 15.0 % Reference Lab Notebook 7043 pg. 061

J00F40	R301102-01	93	5.5	0.100				21	100				11	01/26/03	01/27	GRB-109
J00F41	R301102-02	93	6.8	0.100				21	100				11	01/26/03	01/27	GRB-110
J00F42	R301102-03	93	5.9	0.100				44	100				11	01/26/03	01/27	GRB-111
BLK (QC ID=43675)	R301100-03	93	5.6	0.100				21	100					01/26/03	01/27	GRB-102
LCS (QC ID=43674)	R301100-02	93	5.1	0.100				22	100					01/26/03	01/27	GRB-101
Duplicate (R301102-01) (QC ID=43681)	R301102-04	93	6.5	0.100				22	100				11	01/26/03	01/27	GRB-112

Nominal values and limits from method 15 0.100 5-250 100 180

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
CP-060	Soil Preparation, rev 4	
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3	

AVERAGES ± 2 SD	MDA	5.9	±	1.3
FOR 6 SAMPLES	RESIDUE	25	±	18

METHOD SUMMARIES

Page 3

SUMMARY DATA SECTION

Page 16

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-CMS

Version 3.06

Report date 01/30/03

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2051

Test GAM Matrix SOLID
SDG 7756
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2051

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Cobalt 60	Cesium 137
------------------	------------------	-----------------	------------------	-----------	------------

Preparation batch 7043-061

J00F40	R301102-01	7756-001	U	0.043
J00F41	R301102-02	7756-002	0.034	0.080
J00F42	R301102-03	7756-003	U	0.109
BLK (QC ID=43675)	R301100-03	7436-003	U	U
LCS (QC ID=43674)	R301100-02	7436-002	ok	ok
Duplicate (R301102-01)	R301102-04	7756-004	- U	ok

Nominal values and limits from method	RDLs (pCi/g)	0.050	0.10
100-NR-1 TSD Sites R.A. Sampling			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ FAC	PREP TION	DILU- %	YIELD %	EFF min	COUNT keV	FWHM keV	DRIFT HELD	DAYS PREPARED	ANAL- YZED	DETECTOR
------------------	------------------	-----------------	---------------	----------	-------------	--------------	------------	------------	------------	--------------	-------------	---------------	------------------	---------------	----------

Preparation batch 7043-061 2σ prep error 15.0 % Reference Lab Notebook 7043 pg. 061

J00F40	R301102-01	0.10	782	687	7	01/23/03	01/23	MB,05,00
J00F41	R301102-02	0.087	728	687	7	01/23/03	01/23	MB,07,00
J00F42	R301102-03	0.14	715	687	7	01/23/03	01/23	02,03,00
BLK (QC ID=43675)	R301100-03	0.086	772	260		01/23/03	01/28	MB,05,00
LCS (QC ID=43674)	R301100-02	0.010	772	260		01/23/03	01/28	01,04,00
Duplicate (R301102-01) (QC ID=43681)	R301102-04	0.19	782	217	8	01/23/03	01/24	MB,05,00

Nominal values and limits from method	0.050 772	100	180
---------------------------------------	-----------	-----	-----

PROCEDURES	REFERENCE	GAMMA_GS
CP-060	Soil Preparation, rev 4	
CP-100	Ge(Li) Preparation for Commercial Samples, rev 5	

AVERAGES ± 2 SD	MDA <u>0.10</u> ± <u>0.12</u>
FOR 6 SAMPLES	YIELD _____ ± _____

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

Page 17

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-CMS</u>
Version <u>3.06</u>
Report date <u>01/30/03</u>

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H2051

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 18

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 630

Case no SDG_H2051

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 19

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 630

Case no SDG_H2051

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

REPORT GUIDES

Page 3

SUMMARY DATA SECTION

Page 20

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 630

Case no SDG_H2051

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES

Page 4

SUMMARY DATA SECTION

Page 21

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford
Contract No. 630
Case no SDG H2051

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
 - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
 - H Similar to 'L' except the recovery was high.
 - P The RESULT is 'preliminary'.
 - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
 - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

REPORT GUIDES

Page 5

SUMMARY DATA SECTION

Page 22

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756

Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford

Contract No. 630

Case no SDG H2051

DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

Page 6

SUMMARY DATA SECTION

Page 23

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2051

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

REPORT GUIDES

Page 7

SUMMARY DATA SECTION

Page 24

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2051

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

REPORT GUIDES

Page 8

SUMMARY DATA SECTION

Page 25

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756

Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford

Contract No. 630

Case no SDG_H2051

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

REPORT GUIDES

Page 9

SUMMARY DATA SECTION

Page 26

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H2051

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits

REPORT GUIDES

Page 10

SUMMARY DATA SECTION

Page 27

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756

Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford

Contract No. 630

Case no SDG H2051

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

Page 11

SUMMARY DATA SECTION

Page 28

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. 630

Case no SDG H2051

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

REPORT GUIDES

Page 12

SUMMARY DATA SECTION

Page 29

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2051

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

Page 13

SUMMARY DATA SECTION

Page 30

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756

Contact Melissa C. Mannion

GUIDE , c o n t .

Client Hanford

Contract No. 630

Case no SDG H2051

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

REPORT GUIDES

Page 14

SUMMARY DATA SECTION

Page 31

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 01/30/03

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H2051

SDG 7756
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H2051

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES

Page 15

SUMMARY DATA SECTION

Page 32

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/30/03

SAMPLE RECEIPT CHECKLIST

[illegible]

Calibration date _____